

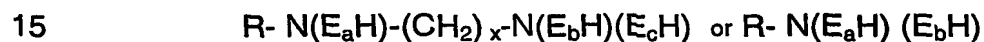
What is Claimed:

1. An emulsified water in oil composition comprising:

- a) a fuel;
- b) a water;
- 5 c) an additive surfactants package comprising
 - i) an alkylamine ethoxylate, and
 - ii) a PIBSA-derived surfactant; and
- d) optionally at least one of a functional amount of at least one water – soluble, oil-insoluble functional additive dissolved in the emulsified aqueous phase.

2. The composition of claim 1 wherein the additive surfactant package comprises:

(a) at least one of an alkylamine ethoxylated surfactant that is a mono- or a di- amine of the general formulae and combinations thereof:



wherein R =, straight or branched chained alkyl group, C8 to C30, and saturated or unsaturated, containing either 0, or 1, or 2 or 3 double bonds,

wherein N = nitrogen atom,

wherein E is an ethoxylate group, $-CH_2-CH_2-O-$,

20 wherein x = 1, 2, or 3, and

wherein a, b, c, = an integer from 0 to 20 such that a+b+c = any value between 1 and 20; and

(b) at least one of a PIB based material comprising:

- (1) a PIBSA only;
- 25 (2) a PIB succinic acid;
- (3) a PIB succinic acid - amine salt;
- (4) a PIB succinic aminoalkylester or ester-acid or amine salt thereof;
- (5) a succinimide or succinamide or amide-acid salt thereof
- 30 derived by reacting PIBSA with an amine or poly amine;
- (6) a succinic ester derived by reacting PIBSA with a polyol;

or

(7) combinations thereof.

3. The composition of claim 2 wherein R is C10 to C24 and $a+b+c = 1$ to 14.
4. The composition of claim 2 wherein R is C12 to C22.
- 5 5. The composition on claim 1 wherein a fuel is in the range of about 50% to about 99% by weight of the composition; the water is in the range of about 1% to about 50% by weight of the composition; and the additive surfactant package is in the range of about 0.01% to about 10% by weight of the composition.
- 10 6. The composition of claim 1 wherein the water in oil composition is an emulsified water blended fuel and wherein the fuel is selected from the group comprising petroleum distillate fuel such as diesel, gasoline, fuel oil a mixture thereof; a fuel derived from vegetables, corn, alfalfa, rapeseed, soybeans, shale, coal or mixtures thereof; a biodegradable fuel; biodiesel;
- 15 residual fuel; bitumen; alcohol; ether; ethanol; Fischer-Tropsch fuels; gas to liquids fuels and combinations thereof.
7. The composition on claim 1 wherein the PIBSA-derived surfactant has a PIB chain of molecular weight in the range of about 200 to about 5000.
8. The composition on claim 1 wherein the PIBSA-derived surfactant has a
- 20 PIB chain of molecular weight in the range of about 300 to about 3000.
9. The composition on claim 1 wherein the alkylamine ethoxylate is selected from the groups comprising tallow amine penta ethoxylate, tallow amine tetra ethoxylate, tallow amine hexa ethoxylate, tallow amine hepta ethoxylate, oleyl amine deca ethoxylate, oleyl amine undeca ethoxylate,
- 25 oleyl amine nona ethoxylate, oleyl amine dodeca ethoxylate, tris(2-hydroxyethyl)-N-tallowalkyl-1,3-diaminopropane, oleyl amine penta ethoxylate, oleyl amine diethoxylate, stearyl alcohol penta ethoxylate, stearyl amine diethoxylate and combinations thereof.
10. The composition of claim 1 wherein the alkylamine ethoxylate is
- 30 selected from the groups comprising tallow amine penta ethoxylate, oleyl amine deca ethoxylate, tris(2-hydroxyethyl)-N-tallowalkyl-1,3-diaminopropane and combinations thereof.

11. The composition of claim 2 wherein the additive surfactant package is added to the following comprising:

- a) a hydrocarbon;
- b) a water;
- 5 c) optionally an antifreeze chemical; and
- d) optionally an ammonium nitrate.

12. The composition of claim 1 wherein surfactants are used in combination with the additive surfactant package but are not the additive surfactant package surfactants and include but are not limited to a) natural fats; b) 10 ionics excluding the additive surfactant package c) co-surfactants; d) fatty acids and their amine salts; e) ethoxylate alcohols and f) combinations thereof.

13. The composition of claim 2 wherein surfactants are used in combination with the additive surfactant package but are not the additive surfactant 15 package surfactants and include but are not limited to a) natural fats; b) ionics excluding the additive surfactant package c) co-surfactants; d) fatty acids and their amine salts; e) ethoxylate alcohols and f) combinations thereof.

14. The composition of claim 1 wherein the additive surfactant package is in 20 the range of about 0.01% to about 10% by weight of the water in oil composition.

15. The composition of claim 1 wherein the additive surfactant package is in the range of about 0.02% to about 5% by weight of the water in oil composition.

25 16. The composition of claim 2 wherein the PIB succinic acid - amine salt is prepared by reacting the PIB succinic acid with either an alkyl amine primary, secondary, or tertiary) or an ethanolamine and/or ethoxylated amine and wherein the salt can be a fully neutralised or partially neutralised salt.

17. The composition of claim 2 wherein a PIB succinic aminoalkylester or 30 ester-acid or amine salt thereof is prepared by reacting the PIBSA or PIB succinic acid or ester thereof with a hydroxylamine or an alkanol amine like

ethanolamine and/or ethoxylated amine and, wherein the salt can be a fully neutralised or partially neutralised salt.

18. A process for making a water in oil emulsion comprising emulsifying a fuel, a water, a PIBSA-derived surfactant and an alkylamine ethoxylated surfactant to form an water in oil emulsion.
19. A process to produce an emulsified water in oil composition from a concentrate comprising emulsifying a portion of a fuel, a portion to substantially all of a water, substantially all of the PIBSA-derived surfactant, substantially all of an alkylamine ethoxylated surfactant to form a concentrate emulsion; and then diluting the concentrated emulsion with the remaining portion of fuel and water at the time of use.
20. The process of claim 18 wherein an antifreeze chemical and an ammonium nitrate are added to the emulsification.
21. The process of claim 18 wherein the following components are added to the emulsification in combination with the additive surfactant package but are not the additive surfactant package surfactants and include but are not limited to a) natural fats; b) ionics excluding the additive surfactant package c) co-surfactants; d) fatty acids and their amine salts; e) ethoxylate alcohols and f) combinations thereof.

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